

IN THE CLAIMS:

1. (Amended.) A packing ring segment for use in forming a labyrinth seal with a turbine shaft rotatably mounted within the casing of an axial flow elastic fluid turbine, wherein said axial flow elastic fluid turbine includes at least one stage having (i) at least one diaphragm stationarily mounted in said casing and having a plurality of steam directing nozzles, and (ii) a rotor fixedly attached to said turbine shaft and having a plurality of blades bounded by a shroud and disposed adjacent to said plurality of steam directing nozzles, said packing ring segment comprising:

a body portion for mounting within a portion of said diaphragm and having a longitudinal extent, a vertical extent, and a horizontal extent, and being particularly adapted for mounting in a portion of said diaphragm, said body portion having a groove formed along said vertical extent and extending along said longitudinal extent, said body portion having a bore in opposing side edge surfaces for accepting a spring spanning said bore and a bore in an adjacent packing ring segment according to this claim; and

a plurality of brush segments mounted within said groove of said packing ring segment, each said brush segment having a packet of bristles with said bristles having tip portions trimmed to terminate along a radius of curvature continuously extending along the longitudinal extent of said body portion so as to form a labyrinth seal with said turbine shaft, and

each said bristle being disposed in a plane substantially parallel to the principal plane of said rotor and extending in the direction of rotation of said turbine shaft.

15. An axial flow elastic fluid turbine comprising:

an outer casting;

a turbine shaft rotatably supported in said outer casting; and

a plurality of turbine stages installed along said turbine shaft and contained within said outer casting, each said turbine stage including

a diaphragm stationarily mounted in a recess formed in said turbine casting and having a plurality of steam directing nozzles,

a rotor fixedly attached to said turbine shaft and having a plurality of blades bounded by a shroud band and being disposed adjacent said plurality of steam directing nozzles, and

a packing ring consisting of an arrangement of packing ring segments mounted in a circumferentially extending groove formed in said diaphragm and providing a continuously extending seal with said turbine,

each said packing ring segment including

B24 a body portion for mounting within said circumferentially formed groove and having a longitudinal extent, a vertical extent, and a horizontal extent, and being particularly adapted for mounting in a portion of said diaphragm, said body portion having a brush mounting groove formed along said vertical extent and extending along said longitudinal extent; and

a plurality of brush segments mounted within said brush mounting groove of said packing ring segment, each said brush segment having a packet of bristles with said bristles having tip portions trimmed to terminate along a radius of curvature adapted to form a steam seal with said turbine shaft, and

each said bristle being disposed in a plane substantially parallel to the principal plane of said rotor and extending in the direction of rotation of said turbine shaft;

a radial positioning means comprising a spring between adjacent ring segments to forcibly cause said segments to move to a large clearance position, while working fluid flows into to an annular space between said casing and said ring segments urges said segments toward said small clearance position, whereby at low speed and small turbine loads the spring forces will predominate, while at high flows and high working fluid pressure the pressure forces will predominate;

wherein said brush segment form a continuous seal.

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24. (Amended.) A packing ring segment (for use in forming a labyrinth seal with a turbine shaft rotatably mounted within the casing of an axial flow elastic fluid turbine,

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wherein said axial flow elastic fluid turbine includes at least one stage having (i) at least one diaphragm stationarily mounted in said casting and having a plurality of steam directing nozzles, and (ii) a rotor fixedly attached to said turbine shaft for rotation about an axis of rotation and having a plurality of blades bounded by a shroud band disposed within a principal plane of said rotor and adjacent said plurality of steam directing nozzles,) said packing ring segment comprising:

BS a body portion for mounting within a portion of said diaphragm and having a longitudinal extent, a vertical extent, and a horizontal extent, and being particularly adapted for mounting in a portion of said diaphragm, said body portion having a groove formed along said vertical extent and extending along said longitudinal extent, said body portion having a bore in opposing side edge surfaces for accepting a spring spanning said bore and a bore in an adjacent packing ring segment according to this claim; and

a plurality of brush segments mounted within said groove of said packing ring segment, each said brush segment having a packet of bristles with said bristles having tip portions trimmed to terminate along a radius of curvature continuously extending along the longitudinal extent of said body portion [so as] effective to form a labyrinth seal [with said] when a turbine shaft is positioned along said tip portions of said bristles, and

each said bristle being disposed at an acute angle with respect to [the principal plane of said rotor] said radius of curvature.

REMARKS

Entry of the foregoing amendments, and reconsideration and reexamination of the subject application, as amended, pursuant to and consistent with 37 C.F.R. §1.104 and §1.112, and in light of the following remarks, are respectfully requested.

Amendments and Drawings

The various problems with the specification noted by the Examiner have been corrected by these amendments.

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